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In the Application of:
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For: RETURN PATH FILTER

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INFORMATION DISCLOSURE STATEMENT

Sir:

Applicants submit herewith patents, publications or other information of which they are aware, for a determination of whether such patents, publications, or other information are "material to patentability" of the inventions claimed in this application under 37 CFR 1.56. This Information Disclosure Statement is not intended to constitute an admission that any patent, publication or other information referred to herein is "material to patentability" for the inventions claimed in this application unless specifically indicated as such.

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A list of the patents and/or publications is set forth on the attached Form PTO-1449. A copy of each of the items listed on Form PTO-1449 is supplied herewith. A concise explanation of each item listed on Form PTO-1449 is provided as follows.

1. U.S. Patent No. 5,481,389 to Pidgeon et al. (1996) discloses a circuit for correcting distortion in a CATV optical communication system, containing in-phase and quadrature variable gain networks. A Butterworth diplex filter is used in the in-phase variable gain network circuit, as shown in Figs. 6 and 7. The diplex filter is located just ahead of an amplitude equalizer and a delay equalizer. The circuit is described Column 8, lines 25-61.

2. U.S. Patent No. 5,434,610 to Loveless (1995) discloses a diplex filter 214 (See Fig. 6), which provides a coupling connection from a reverse path amplifier to complete a path for reverse path communications to the head-end of a CATV System. The filter is shown in Fig. 6, and described at Column 7, lines 23-42. Flat loss is introduced in the return path at the "PLUG-IN PASSIVE" box of the circuit shown in Fig. 6. Different attenuation values can be "plugged-in" at this box location to balance signal levels along the cable feeder system (See Column 8, lines 5-68 and Column 9, lines 1-12). The plug-in devices, for changing attenuation, are directional couplers with different losses (See Fig. 7). An AC bypass circuit 206 (See Fig. 6) reroutes power to connection 204 and bypass circuit 208 reroutes power to connection 200 (See description at Col. 6, lines 56-66).

3. U.S. Patent No. 5,425,027 to Baran (1995) discloses a new reverse path band of 550-700 Mhz. Fig. 1 discloses a conventional CATV network with diplex filters 12 in the return path. See also Fig. 5a. The new return path band is shown in Fig. 2. The system permits operation in the conventional return path signal band. The conventional diplex filter is modified to accommodate the new return path band (See Fig. 5b). A description of the diplex filters shown in Figs. 5a and 5b is provided at Column 8, lines 32-68. The diplex filters can be a modular plug-in unit.

4. U.S. Patent No. 5,404,161 to Douglass et al. (1995) discloses the use of a diplex filter having a 600 Mhz crossover in a tuned channel detector system located in the cable path. This filter is shown in Figs. 7 and 8. As shown in Fig. 8, a conventional diplexer detects the TV's local oscillator which exceeds 600 Mhz.

5. U.S. Patent No. 5,379,141 to Thompson et al. (1995) the use of a diplex filter in an optical CATV system. See Figures 3 and 4. Figures 3 and 4 show an interface circuit between coaxial and optical systems using a diplex filter 73, the schematic of which is shown

in Fig. 8. The lowpass filter passes frequencies up to 30 Mhz (for return path communication), and the highpass filter passes signals above 54 Mhz (for forward path signals). This filter is described at column 9, lines 50-66. Equalizers are used in the circuit.

6. U.S. Patent No. 5,130,664 to Pavlic et al. (1992) discloses a conventional two way CATV cable system using diplex filters 14 in the return path. The diplex filters are described at Column 2, lines 46-59. See also Fig. 1. As shown in Fig. 1, the return path, between lowpass filters 14b and 14b, is an amplifier 38, equalizer 16, and a resistive attenuator 15. This return path circuit is described at column 4, line 66 - column 5, line 14.

7. U.S. Patent No. 4,963,966 to Harney et al. (1990) discloses a CATV cable system tapping circuit (See Fig. 15). The tapping circuit of Fig. 15 contains a diplex filter circuit for forward and return paths in a conventional CATV system. Figure 15 also includes a bypass circuit 310 for power current. This circuit is described at Column 10, line 63 - Column 11, line 61. Stepped attenuation is not suggested by the circuit.

8. U.S. Patent No. 4,397,037 to Theriault (1983) discloses a specific diplexer circuit 20 for television tuning systems. The diplexer includes a high pass filter 22, a low pass filter 26, and a low pass filter 28, as shown in the figure. HPF 22 and LPF 26 together serve as a bandpass filter for frequencies in the UHF-TV Band (input at 20A - output at 20C). LPF 28 routes VHF signals between input 20B and output 20C (through LPF 26). LPF 28 aids in the functioning of HPF 22 and LPF 26 by presenting a relatively high impedance to UHF-TV signals at circuit point 24 so that they are directed to LPF 26 without substantial attenuation. Further, L4 and C4 serve as a series resonant trap, and have values selected to resonate at the first IF frequency of about 415 MHz.

9. Wideband High-Selectivity Diplexers Utilizing Digital Elliptic Filters. Robert J. Wenzel, IEEE Transactions on Microwave Theory and Techniques, Vol. Mtt-15, No. 12, December 1967. Describes design techniques and element value tables for the construction of compact diplex filters, using digital elliptic component filters.

10. Article entitled "Designing the Return System for Full Digital Services", by Dean A. Stoneback and William F. Beck, dated 1995, p. 269-77. This article suggests that by reducing the loss variance in the return path (i.e., equalizing or balancing the return path), ingress can be reduced to a manageable level. It suggests that by addressing the loss variance

problem, the ingress problem can be satisfactorily resolved in most cases. It suggests two alternative methods of balancing the return path loss. The first is to employ a diplex filter with flat loss in the return band. The second method is to use an equalizer which covers the entire forward and return frequency bands. The diplex filter approach is discouraged by the Stoneback Article, because of the heretofore prevailing view that the device which adds flat loss in the return path is more difficult to manufacture.

The references discussed above neither disclose nor suggest the inventive aspects of the invention claimed in the instant application. It is respectfully submitted that this application differentiates over the above and that the application is in condition for examination by the Examiner and, subsequently, its early allowance.

Respectfully submitted,

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